Chilton's
JUNE 1980

AUTOMOTIVE INDUSTRIES

Special Report, p. 27
Federal Agencies
Getting Off Detroit's Back?

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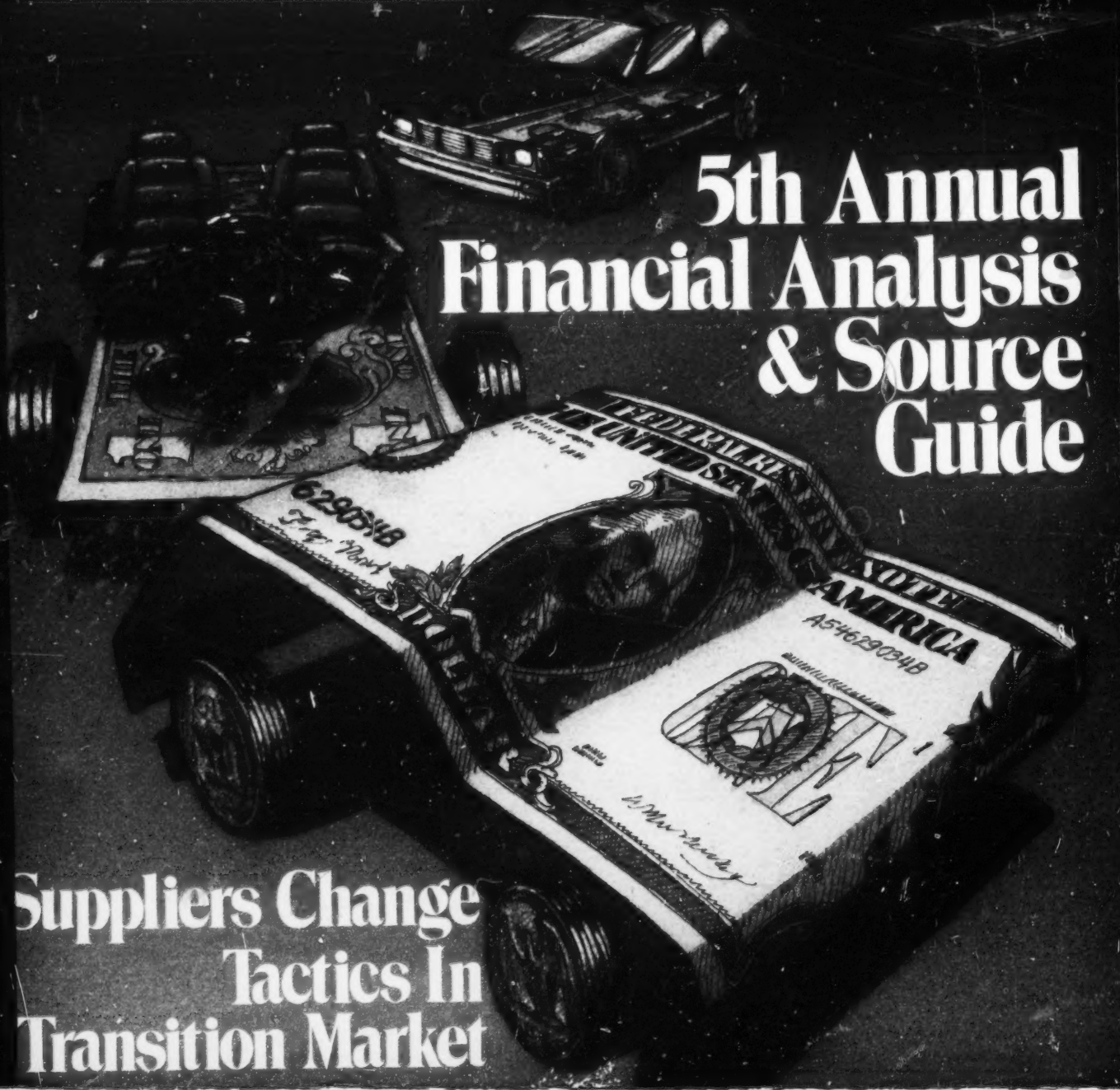
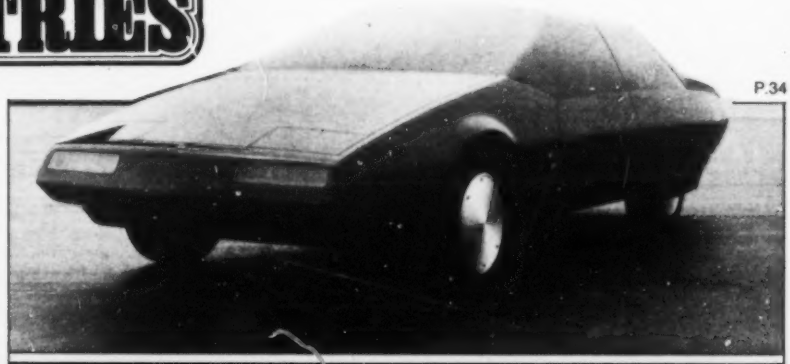


5th Annual Financial Analysis & Source Guide

Suppliers Change Tactics In Transition Market

Chilton's
AUTOMOTIVE INDUSTRIES

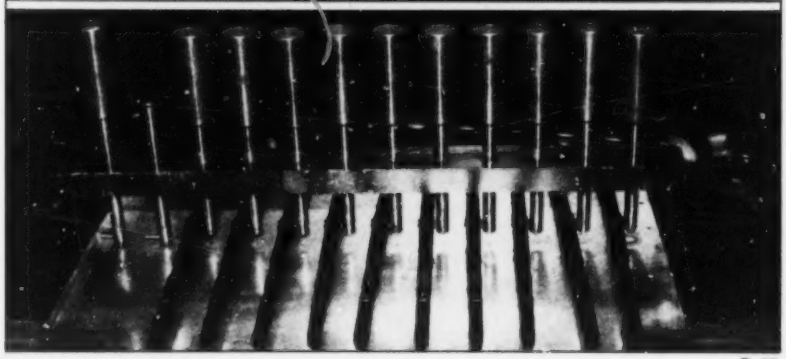


P.34

Materials
A-01 Ferrous Metals
A-02 Non-Ferrous Metals
A-03 Plastics
A-04 Elastomers (Rubber)
A-05 Glass
A-06 Chemicals (Coatings and Finishes)
A-07 Composites
A-08 Paints
A-09 Cardboard/Fiberboard
A-10 Acoustic Materials

Brakes & Brake Parts
E-01 Entire Brake System Assemblies
E-02 Brake Parts (Drums, Seals, Linings, Rotors, Hoses)
E-03 Anti-Skid Assemblies
E-04 Brake Tubing

P. 151



P. 68

FEATURES

42 Fifth Annual Suppliers' Financial Analysis
An in-depth look at how top automotive suppliers fared last year.

56 Suppliers Change Tactics In Transition Market
Plans for dramatically changed vehicles have sent suppliers scurrying for new strategies in a spirit of adaptability and optimism.

64 It's All A Question Of Balance
With lighter, more energy efficient vehicles, balancing of individual components and subassemblies becomes critical.

68 Test Room Guarantees A Clean Sweep
A major OEM supplier of windshield wiper blades has found the answer to its testing requirements in a compact hot and cold chamber.

71 Supplier Profiles
This special merchandising supplement describes products, new R&D efforts, management and much more.

151 Automotive OEM Source Guide
This cross-indexed supplier directory details vital information on who makes what and where.

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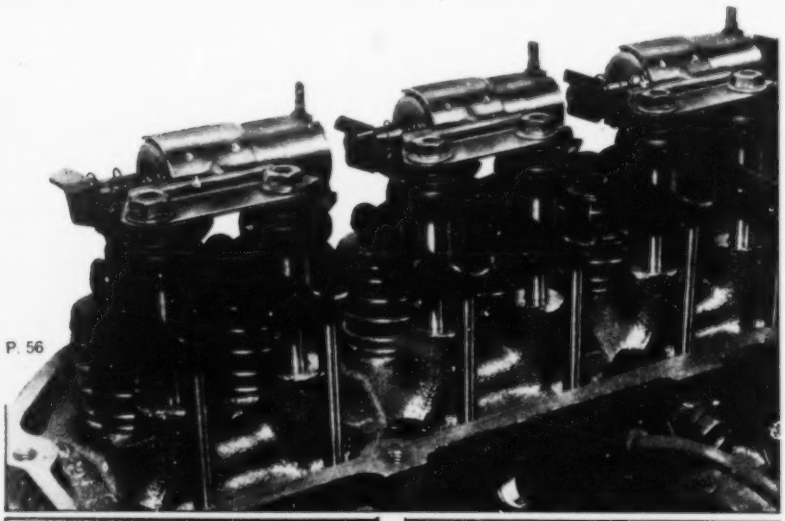
NEWS

7 Editorial: Hope Springs Eternal
9 Letters: Tirade & Trivia
11 Detroit: Teaming Up To Battle The Slump
12 Washington: OEM's See Possible Big Car Comeback
16 Performance: Of Steam, Horsepower & Days of Yore
23 Auto/Pulse Int'l: Europe's Changing Role In The '80s

Automotive News/Analysis
27 Feds Getting Off Detroit's Back?
29 Audi Turbo Gets 30% Power Boost
30 Fired Up For Powder Metals
33 Fiat's Future Brightens In Brazil
34 Four Diesels For Over The Road
35 Goetze AG To Build In U.S.
35 Europe & U.S. Team With Millers
36 Iveco Intros Class 2, 3 Diesels
38 Eaton To Spend Big In Europe
39 News In Brief



P. 56

P. 226

P. 230

DEPARTMENTS

226 Inside Japan: Nissan's Unanswered Questions
230 Trendsetters: AOT & TRX Make The Difference
234 Production: Recirculated Air Returns Cash
238 Materials: Galvanized Steel Carries The Load
242 Truck & Off-Highway: Ceramics Eliminate Diesel Cooling
246 New Product Showcase
251 Business Staff
252 Ad Index
255 Reader Information Cards

COVER

Cover illustration by Ponder Goembel.

NEXT MONTH

Our Second Annual Metals Issue looks at new applications, coatings, production methods and markets for the wide variety of automotive metals.

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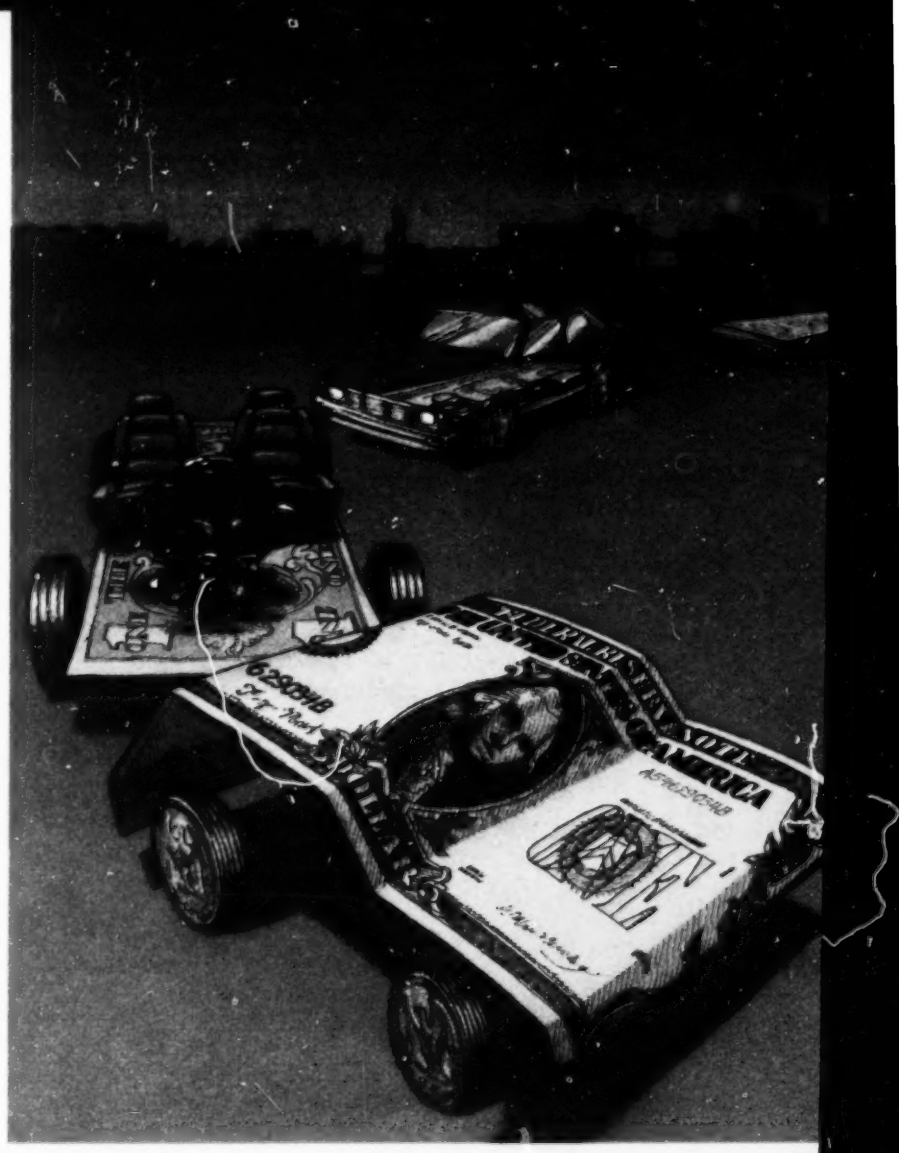
ABP

5th Annual Suppliers' Financial Analysis

by Ira G. Black and Cathy Bretherick



The year 1979 was somewhat of a surprise.

There were substantial cutbacks in the automotive and housing industries, to name two key area. But the economy finished 1979 on a surprisingly strong note. Employment continued on an upward curve, industrial production stayed at a high level, capital spending proceeded apace and consumers spent rather freely for most goods.

While the overall picture appeared sound, there was an undercurrent of concern. What it all added up to was evidence that a downturn was indeed in the wings waiting to spring. The indications are that 1980 will see a general decline. But for now, let's look back at how the automotive supplier industry fared in 1979.

Looking at some selected parts and components suppliers, diversification and geographic spread helped a somewhat soggy domestic market.

As an example, strong demand for many of the components made by Rockwell International's automotive unit aided in making 1979 a record year for the division in both sales, which increased 24%, and earnings, which climbed a very healthy 33% over the year-previous level. The company's overseas automotive arm is long and well established, with 33 manufacturing facilities outside the U.S. Twenty-seven percent of its automotive division sales come from overseas.

Eaton Corp. fared extremely well during the year, with net sales of $3.36 billion, up 20% over the previous year. Automotive accounts for a large portion of Eaton's business—9% deriving from passenger **car components and another 40% from truck components. The company** manufactures truck components on five continents.

Borg-Warner sales of over $2.7 billion were 17% above 1978 figures. Its Transportation Equipment group, the company's largest product area, managed a 9% earnings improvement on an increase of 17% in sales despite the depressed U.S. auto market. The company points out the diversification of the group within the broad transportation market was a big factor in 1979's strong performance. Borg-Warner sells components to passenger car **makers worldwide, and the truck, off-highway, recreational, agricultural** and marine industries. OEM sales to passenger car builders actually account for less than a quarter of the group's sales.

Diversification also stood Bendix Corp. in good stead in 1979 as it turned in another record year. Company revenues of $3.86 billion were up 5.7% over 1978 while earnings took a 25.4% leap to nearly $130 million. The value of Bendix's diversification strategy was demonstrated in 1979 as revenues from its foreign operations, heavy vehicle and replacement parts operations

helped offset the effects of the new car downturn.

For TRW, 1979 sales in its car and truck group totaled close to $1.8 billion, a 19% boost over the year prior and 39% of total TRW sales. Again, diversification and geography played a large role—55% of its car and truck sales are outside of North America and only 25% of its North American sales goes to the OEM passenger car market. On a worldwide basis, about three-quarters of TRW's vehicle component sales are to OEMs while the remaining quarter is to the aftermarket.

Inflation and other factors combined in 1979 to put the bite on an already hurting steel industry. In spite of the fact that steel shipments of just over 100 million tons in 1979 were the highest since 1974's 109.5 million tons, steelmakers made less money. Net income decreased 10% for the steel industry as a whole.

A couple of big reasons for 1979's weak showing in steel: soft demand, especially in automotive; and heavy increases in employment costs, the latter growing by 15% on top of a previous big bite in 1978.

Demand, unfortunately, is not improving. Industry watchers say domestic mill shipments will decline further this year.

The nonferrous metals arena in 1979 can generally be described in a single word—Wow! The aluminum industry broke most of its profit and sales records in '79; copper, whose recovering began in '78, kept on recovering; lead, zinc and nickel producers all did better, some better than others.

The North American "Big Four" aluminum producers—a group which includes Alcoa, Alcan, Reynolds and Kaiser—managed to get their combined profits past the billion-dollar milepost for the first time ever. With a 1.9% increase in delivered tonnage, they turned in an 18% increase in sales and posted a net profit increase of 53.6%.

For 1980, insiders say "Wow!"

SELECTED PARTS & COMPONENTS SUPPLIERS

Average % Return on Sales = 4.76

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales
ITT	17197.4	380.7	2.2
Rockwell Int.	6180.0	261.0	4.2
TRW	4560.3	194.6	4.3
Bendix	3856.4	162.6	4.2
Eaton	3359.9	154.1	4.6
Dana	2761.1	164.2	5.9
Borg-Warner	2717.4	155.6	5.7
Colt Ind.	2140.5	111.4	5.2
Cummins	1770.0	57.9	3.3
Timken	1282.1	102.1	8.0

SHIPMENTS & ORDERS FOR MACHINE TOOLS

Date		Shipments	Net New Orders
1974	Total	$2,030,550	$2,502,250
1975	Total	$2,451,700	$1,186,350
1976	Total	$2,059,600	$2,230,200
1977	Total	$2,280,750	$2,996,900
1978	Total	$3,013,450	$4,344,000
1979	Total	$3,876,550	$5,542,700

Figures in thousands (000)
Source: NMTBA

SELECTED STEEL SUPPLIERS

Average % Return on Sales = 3.70

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales	% Return On Equity
U.S. Steel	12929.1	(-293.0)	(-2.3)	(-6.0)
LTV	7996.8	173.5	2.2	25.3
Bethlehem Steel	7137.2	275.7	3.9	11.7
Armco Inc.	5035.1	221.0	4.4	13.4
National Steel	4234.5	126.5	3.0	9.4
Republic Steel	3987.4	121.2	3.0	8.6
Inland Steel	3635.2	131.1	3.6	10.3
Allegheny Ludlum	1550.0	71.5	4.2	6.0
Wheeling-Pittsburgh	1242.3	49.7	4.0	14.6
Sharon Steel	523.8	58.6	10.0	22.8

STEEL SHIPMENTS TO MAJOR MARKETS

(million of tons)

	1974	1975	1976	1977	1978	1979
Automotive	18.9	15.2	21.4	21.5	21.3	18.6
Service Centers	20.4	12.7	14.6	15.3	17.3	18.2
Construction	17.6	12.0	12.9	12.0	13.1	13.7
Containers and Packaging	8.2	8.1	6.9	6.7	6.6	6.8
Machinery and Equipment	9.7	7.3	7.9	8.2	8.8	8.8

for the first half and, "Ow!" for the second half as the economic recession begins to get a foothold.

Plastics suppliers generallly had a decent year, though for most the increase in sales was due more to higher prices than to changes in volume or product mix. Price increases in plastics were rampant in '79—on the order of 30% or so—reflecting the huge increases in feedstock and energy costs. But, with fairly strong overall industry demand, the price boosts went through more smoothly than might have been expected. Export demand, say most producers, was excellent, helped along by comparatively lower feedstock cost in the U.S. Exports accounted for $2.5 billion in 1979; a 10% increase is anticipated over the year ahead.

For the year ahead, plastics suppliers expect an overall dropoff in demand, with perhaps 5% net growth for 1980. But there's a near-universal feeling it'll pick up again in 1981 and grow strongly at about an 8-9% annual rate through at least the first half of the decade ahead.

The tire industry generally has lost a lot of its bounce. Return on sales for a five-company average was just over 2%. The first quarter of 1980 is dismal, to say the least. This is a continuation of a seven-year profit decline that's been an albatross around the industry's neck. There is considerable feeling, however, both within and outside the industry, that this decline will reverse itself by 1982-84. Meantime, though, insiders say tire shipments are likely to take a fairly steep slide in 1980.

Current over-capacity in the tire industry is partially to blame for the soft shipment picture, but again there is the expectation that rising demand, especially for radials, will help turn this around.

In June of last year, the National Machine Tool Builders Association (NMTBA) announced that orders for machine tools were substantially higher than in May 1978.

By the end of the first quarter of 1980, NMTBA reported more good news. In short, the machine tool industry is not hurting—not last year and not now.

Shipments in 1980's first quarter showed a 33% gain over the same quarter of 1979. Dollar volume of total shipments during first quarter 1980 rose to $1.15 billion. By first quarter's end, total machine tool bookings stood at over $5.5 billion.

The recession has had little impact on the machine tool industry. Automotive and aerospace are major customers of machine tool builders, and in both cases tooling programs are booming. In Detroit, the Big Three boosted capital plant and equipment spending some 39% in 1978, 16% in 1979 and predict at least a 13% rise this year.

For machine tools, certainly, the outlook is rosy through at least the first half of 1981.

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SELECTED MACHINE TOOL SUPPLIERS

Average % Return On Sales = 8.42

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales
Ex-Cell-O	961.9	54.2	5.6
Cincinnati-Milacron	747.8	55.4	7.4
Cross & Trecker	297.9	26.4	8.9
Giddings & Lewis	256.9	28.8	11.2
Gleason	217.1	19.6	9.0

SELECTED TIRE & RUBBER SUPPLIERS

Average % Return On Sales = 2.04

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales
Goodyear	8238.7	146.2	1.8
Firestone	5284.2	112.9	2.1
Goodrich	2983.1	82.6	2.7
Uniroyal	2574.6	(-120.5)	——
General Tire	2324.3	81.7	3.6

SELECTED PLASTICS SUPPLIERS

Average % Return On Sales = 6.02

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales
DuPont	12571.8	938.9	7.6
Union Carbide	9176.5	556.2	6.1
Celanese	3146.0	141.0	4.5
Hercules	2300.0	142.0	7.0
Owens-Corning-Fiberglas	2245.2	109.3	4.9

SELECTED NONFERROUS METAL SUPPLIERS

Average % Return on Sales = 8.78

Company	'79 Net Sales ($ millions)	'79 Net Earnings ($ millions)	% Return On Sales
Alcoa	4847.0	504.6	10.5
Alcan	4441.0	427.0	9.6
Reynolds	3305.2	177.1	5.4
AMAX	2865.4	365.3	12.7
Inco	2488.5	141.7	5.7

Suppliers' Financial Analysis

COMPANY	SUPPLIER OF:	'79 NET SALES ($ millions)	'79 NET EARNINGS ($ millions)	% Change Over '78 +(−)	1979-1978 EARNINGS/ SHARE	% RETURN ON SALES	% RETURN ON EQUITY
Abex Corp.	P+C	3734.6	107.4	+17.2	5.31-4.88	7.9	8.9
ACCO Ind., Inc.	MS	534.7	20.1	—	8.33-8.35	3.8	14.1
Alcan Aluminum Ltd.	M	4441.0	427.0	+43.8	10.04-7.34	9.6	21.0
Alco Standard Corp.	MS	1925.1	50.4	+5.6	5.05-4.51	2.6	19.7
Alcoa	M	4847.0	504.6	+61.0	14.29-8.90	10.5	21.7
Allegheny Ludlum Industries	M	1550.0	71.5	+214.1	7.30-2.10	4.2	6.0
Allen Group Inc.	P+C	343.2	10.2	+20.0	2.44-2.10	3.0	14.3
Allied Chemical	P+C	4332.0	10.8	(−91.1)	.20-4.25	0.3	0.9
Allis-Chalmers Corp.	P+C	1972.0	81.4	+7.1	6.23-6.15	4.1	12.7
Amax Inc.	M	2865.4	365.3	+228.3	6.49-2.76	12.7	9.3
American Can Co.	M	4515.0	127.3	+20.6	6.44-5.32	2.8	12.0
American Motors Corp.	MS	3177.0	83.9	+228.6	2.76-1.21	2.6	19.0
American Standard Inc.	P+C	2431.6	132.2	+30.4	9.52-7.23	5.4	26.0
Ametek	MS	392.9	22.4	+15.7	2.11-1.85	5.7	22.3
AMP Inc.	P+C	1013.2	121.3	+24.0	3.36-2.67	12.2	24.8
Armco	M	5035.1	221.0	+11.4	4.82-4.29	4.4	13.4
Armstrong Rubber Co.	P+C	393.7	8.5	(−11.0)	4.39-5.03	2.1	7.2
Asarco Inc.	M	1724.2	259.1	—	8.56-1.69	15.0	22.9
Associated Engineering Ltd.	P+C	838.6	32.8	(−37.8)	———	7.1	—
Athlone Industries	MS	281.9	3.3	(−73.6)	1.14-4.05	1.2	6.1
Atlantic Richfield	O	16233.9	1165.9	+44.9	9.48-6.60	7.1	19.1
Avery International	M	562.1	21.1	+17.2	2.35-1.94	3.7	13.7
Barnes Group	P+C	431.5	25.2	+54.6	3.68-2.40	5.8	22.5
Bearings, Inc.	P+C	294.2	13.9	+24.1	3.49-2.81	4.7	15.2
Beatrice Foods	MS	7488.4	261.0	+17.8	2.60-2.41	3.5	14.1
Beckman Instruments	O	426.7	29.3	+31.0	1.66-1.35	6.9	19.3
Belden	P+C	291.4	11.4	+29.5	5.53-4.43	3.9	17.5
Bendix Corp.	MS	3856.4	162.6	+25.4	7.10-5.74	4.2	16.5
Bethlehem Steel Corp.	M	7137.2	275.7	+22.5	6.31-5.15	3.9	11.7
Betz Laboratories, Inc.	MS	180.2	19.8	+23.8	2.56-2.02	11.0	22.0
Binks Mfg. Co.	PE	124.3	9.7	+18.0	3.17-2.69	7.8	20.6
Black & Decker	PE	1205.1	94.4	+43.0	2.25-1.58	7.8	18.4
Bliss & Laughlin Ind.	MS	287.5	17.7	+30.5	3.01-2.30	6.2	16.9
Boise Cascade	M	2916.6	174.9	+31.7	6.52-4.91	6.0	14.9
Borg Warner	P+C	2717.4	155.6	+16.0	7.25-6.24	5.7	15.2
Briggs & Stratton Corp.	P+C	590.9	48.5	+29.0	3.35-2.59	8.2	23.5
Buckeye International Inc.	P+C	161.9	3.9	—	2.81-0.40	2.4	14.0
Bucyrus-Erie	MS	552.4	56.2	—	2.75-2.66	10.1	15.5
Bundy Corp.	P+C	168.2	8.4	+2.4	2.05-2.01	5.0	12.3
Burgess Norton Mfg. Co.	P+C	855.7	63.4	+27.0	5.88-4.63	7.4	24.1
Burndy Corp.	P+C	229.8	21.4	+39.0	3.44-2.46	9.3	21.2
Carpenter Tech. Corp.	MS	468.6	40.7	+21.0	4.76-3.97	8.7	19.8
Caterpillar Tractor Co.	P+C	7613.2	491.6	+88.4	5.69-6.56	6.4	16.1
Celanese Chemical Corp.	M	3146.0	141.0	+26.0	3.10-2.85	4.5	15.2
Champion Spark Plug Co.	P+C	806.5	56.9	+2.8	1.49-1.45	7.1	14.2
Chicago Pneumatic Tool Co.	PE	454.9	16.6	(−19.4)	3.30-3.84	3.6	9.9
Chrysler Corp.	P+C	12002.0	(−1097.3)	—	(−17.18)-(−3.54)	—	—
Cincinnati Milacron	PE	747.8	55.4	+67.0	3.70-2.23	7.4	24.1
Checker Motors Corp.	MS	150.4	6.9	+0.1	5.66-5.75	4.6	18.0
Clark Equipment Co.	O	1731.7	106.1	+27.3	8.03-6.08	6.1	18.4

Abbreviations:
Supplier of: M indicates a material supplier. MS indicates a multi-supplier. P/C indicates a parts and components supplier. PE designates a production equipment supplier. The designation O simply means other. Earnings per share are quoted on a primary basis for nearly all companies.

Suppliers' Financial Analysis

COMPANY	SUPPLIER OF:	'79 NET SALES ($ millions)	'79 NET EARNINGS ($ millions)	% CHANGE OVER '78 +(−)	1979-1978 EARNINGS/ SHARE	% RETURN ON SALES	% RETURN ON EQUITY
Coachmen Industries, Inc.	P+C	167.9	(−9.2)	——	(−2.60)-2.29	—	—
Colt Industries	P+C	2140.5	111.4	+28.1	8.40-6.66	5.2	17.9
Condec Corp.	P+C	249.3	0.6	(−90.3)	.10-2.34	0.2	0.9
Conoco Inc.	O	13082.9	815.4	+80.7	7.58-4.20	6.2	23.5
ConRac Corp.	PE	137.2	1.2	(−29.4)	0.42-0.63	0.8	3.5
Consolidated Freightways Inc.	P+C	1719.9	65.9	+6.3	1.25-1.10	3.8	19.2
Control Laser Corp.	PE	10.1	1.1	+29.0	0.66-0.53	10.9	—
Cooper Tire & Rubber Co.	P+C	283.2	5.2	(−6.4)	2.60-2.77	1.8	10.8
Copperweld Corp.	M	494.8	23.1	+204.4	4.04-2.00	4.7	15.2
Cross & Trecker Corp.	MS	297.9	26.4	+54.4	3.22-2.11	8.9	22.4
Cyclops Corp.	M	915.4	5.3	(−73.0)	1.35-5.75	0.6	3.3
Cummins Engine Co., Inc.	P+C	1770.0	57.9	(−10.0)	6.84-7.62	3.3	12.8
Curtiss-Wright Corp.	MS	346.6	33.8	+93.1	4.05-2.06	9.8	13.6
Dana Corp.	P+C	2761.1	164.2	+22.0	5.03-4.22	5.9	17.5
Danly Machine Corp.	PE	119.0	4.7	+17.5	5.49-4.72	3.9	13.2
Dart Industries Inc.	M	2403.3	171.7	+35.6	7.04-5.20	7.0	16.2
Data General	P+C	507.5	49.8	+23.6	4.82-4.00	9.8	19.8
Dayco Automotive	P+C	740.0	21.1	+22.0	3.87-3.52	3.0	16.4
Deere & Co.	P+C	4933.1	310.6	+17.3	5.12-4.38	6.3	15.7
Diamond Shamrock	M	2356.9	178.1	+35.9	3.37-3.26	7.5	17.4
Dow Chemical	M	9255.4	783.9	+36.3	4.33-3.16	8.4	20.1
Dow Corning	M	610.2	71.4	+26.8	———	11.6	21.7
Dresser Industries, Inc.	MS	3457.4	228.0	+11.8	5.88-5.22	6.6	16.0
DuPont Co., Inc.	M	12571.8	938.9	+19.0	6.42-5.39	7.6	19.4
Dynascan Corp.	O	56.1	.5	(−81.15)	0.17-0.88	0.9	1.9
Eagle-Picher Industries, Inc.	P+C	590.0	30.7	+10.4	3.03-2.70	5.2	16.1
Eastman Kodak Co.	MS	8028.2	1000.8	+11.0	6.20-5.59	12.5	19.5
Eaton Corp.	P+C	3359.9	154.1	+17.0	5.89-5.02	4.6	17.4
Emhart Corp.	MS	1573.5	53.7	(−23.0)	4.38-5.93	3.4	12.9
Esmark	MS	6743.2	92.4	+15.4	4.40-3.81	13.7	11.0
Essex Chemical Corp.	M	127.4	5.0	(−9.0)	2.03-2.22	4.0	19.0
Ethyl Corp.	M	1656.0	97.5	+16.0	4.94-4.24	5.9	17.0
Evans Products Co.	P+C	1515.1	62.4	+15.1	4.65-3.85	4.1	22.2
Ex-Cell-O Corp.	P+C	961.9	54.2	+38.0	5.31-4.07	5.6	17.3
Exxon Corp.	O	84809.0	4295.0	+55.5	9.74-6.20	5.1	20.1
Fabricated Products Operations	MS	1327.3	63.3	+31.0	3.72-2.90	4.8	20.9
Federal-Mogul Corp.	P+C	663.3	42.1	+16.7	3.31-2.83	6.3	16.6
Ferro Corp.	M	591.9	30.9	+11.8	4.07-3.67	5.2	15.2
Firestone Tire & Rubber	MS	5284.2	112.9	+131.4	1.96-(−2.58)	2.1	7.7
FMC Corp.	MS	3307.5	151.6	+8.0	4.55-4.22	4.6	13.1
Ford Motor Co.	MS	43513.7	1169.3	(−26.4)	9.75-13.35	2.7	11.2
Fruehauf Corp.	P+C	2451.4	88.7	+15.6	7.28-6.34	3.6	17.0
GAF Corp.	MS	1213.2	28.2	(−17.5)	1.83-2.29	2.3	7.8
General Electric	MS	22460.6	1408.8	+13.6	6.20-5.39	6.2	19.1
General Motors	MS	66311.2	2892.7	(−17.5)	10.04-12.24	4.4	15.1
General Signal Corp.	P+C	1342.8	83.3	+37.2	3.52-2.93	6.2	15.7
General Tire & Rubber	MS	2294.9	81.7	(−29.3)	3.44-4.87	3.6	8.0
Genuine Parts Co.	P+C	1337.5	61.7	+20.0	2.24-1.87	4.6	21.9
Getty Oil Co.	O	4831.0	604.0	+84.3	7.34-3.98	12.5	17.5
Giddings & Lewis, Inc.	PE	256.9	28.8	+58.2	5.87-3.74	11.2	28.5

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Gleason Works	PE	217.1	19.6	+19.5	3.91-3.26	9.0	——
B.F. Goodrich Co.	MS	2988.1	82.6	+17.8	4.89-4.39	2.7	9.1
Goodyear Tire & Rubber	MS	8238.7	146.2	(−35.3)	2.02-3.12	1.8	6.8
Goulds Pumps, Inc.	MS	213.7	19.5	+20.0	2.38-1.98	9.1	27.2
W. R. Grace & Co.	M	5266.6	222.6	+30.0	5.02-3.98	4.2	14.2
Gulf & Western Mfg. Co.	MS	5288.3	227.4	+26.0	4.62-3.53	4.3	15.1
Gulf Oil Corp.	O	23910.0	1322.0	+67.1	6.78-4.06	5.5	15.2
Harsco Corp.	M	945.3	51.9	(+12.0)	5.27-4.81	5.5	15.6
Hayes Albion Corp.	P+C	253.9	0.2	(−97.7)	0.06-2.62	——	0.3
Heli-Coil Products	MS	——	6.8	+16.0	3.12-2.56	10.0	——
Hercules Inc.	M	2300.0	142.0	+59.0	3.89-2.36	7.0	19.6
Hewlett-Packard Co.	PE	2361.0	203.0	+32.7	3.43-2.63	8.6	10.7
Honeywell	PE	4209.5	260.5	+29.3	11.89-9.41	6.1	17.2
Hoover Universal, Inc.	P+C	601.3	31.5	+7.3	3.57-3.33	5.2	21.5
Hyster Co.	PE	683.3	63.1	+12.3	10.48-9.38	9.2	25.1
IBM	PE	22862.3	3011.3	(−3.2)	5.16-5.32	.01	12.3
IC Industries	MS	3734.6	106.3	+9.5	5.24-5.23	2.9	8.8
ICI Americas Inc.	M	1192.0	957.0	+42.0	1.66-1.19	0.6	5.8
Illinois Tool Works Inc.	MS	398.1	41.2	+20.1	3.37-2.81	10.3	17.8
Inco Ltd.	P+C	2488.5	141.7	+82.0	1.58-0.77	5.7	7.1
Ingersoll-Rand Co.	PE	2542.1	149.3	+12.2	7.51-6.65	5.8	13.7
Inland Steel	M	3635.2	131.1	(−17.0)	6.27-7.61	3.6	10.3
Interlake, Inc.	M	1104.6	39.7	+278.9	6.66-1.77	3.6	11.9
International Harvester Co.	P+C	8392.0	369.6	+98.0	12.01-6.14	4.4	16.3
International Packings Corp.	P+C	50.6	2.0	(−9.1)	10.06-11.07	3.9	14.1
ITT Corp.	MS	17197.4	380.7	(−42.5)	2.65-4.66	2.2	6.8
Johnson Controls, Inc.	P+C	1024.5	49.9	+13.5	3.58-3.18	4.9	17.0
Jones & Laughlin Steel	M	4174.7	170.7	+251.0	————	——	——
Kaiser Aluminum & Chemical Corp.	M	2926.5	232.2	+59.6	5.66-3.58	7.9	19.0
Kennecott Copper	M	2471.9	130.4	————	3.93-0.15	5.3	8.9
Keystone Consolidated	P+C	412.3	0.8	(−26.0)	0.40-0.54	0.2	0.7
Koehring Co.	O	476.9	14.3	+21.0	4.26-3.45	3.0	11.5
Kohler	MS	413.7	27.5	————	————	6.7	17.0
Lamson & Sessions Co.	P+C	324.8	13.8	+96.6	3.03-1.74	4.2	15.9
Lear Siegler, Inc.	P+C	1327.3	63.3	+31.0	4.50-3.55	4.8	22.7
Libbey-Owens-Ford Co.	O	1208.1	58.1	(−11.7)	4.80-5.50	5.0	11.5
Lindberg Corp.	P+C	64.6	5.7	+ 39.0	1.65-1.19	8.8	27.3
Litton Industries, Inc.	MS	4087.8	188.9	+208.0	4.87-(2.59)	4.6	20.3
Loctite Corp	PE	161.5	23.3	+ 17.0	2.40-2.06	14.5	28.3
LTV Corp.	M	7996.8	173.5	+338.0	6.03-2.33	2.2	25.3
Lubrizol Corp.	M	741.5	90.8	+17.3	4.66-3.95	12.3	23.9
Lucas Industries Inc.	P+C	2496.9	113.7	+ 4.8	1.20-1.34	4.8	11.3
Lukens Steel Co.	M	342.3	7.5	(−41.9)	1.44-2.48	2.2	5.5
Lydall, Inc.	M	108.9	2.7	(−16.0)	1.35-1.63	2.5	11.8
3M Company	M	5440.4	655.2	+16.4	5.59-4.83	12.1	22.0
Marathon Oil Co.	PE	6680.0	323.2	+43.5	5.34-3.73	4.5	20.6
Martin Marietta Corp.	M	2060.8	178.0	+30.9	7.10-5.54	8.0	17.0
Medalist Industries, Inc.	P+C	123.9	4.8	+20.0	2.35-2.02	3.9	13.9
Metex Corp.	P+C	21.3	1.3	+21.0	1.49-1.25	6.0	14.2
Micro Switch	P+C	4209.5	260.5	+29.3	11.89-9.41	6.2	17.2

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Midland-Ross Corp.	P+C	800.8	41.0	+32.0	3.51-2.71	5.1	16.2
Milford Rivet & Machine Co.	PE	27.3	1.2	+43.4	———	4.6	8.2
Mitsubishi, Ltd.	P+C	11492.4	107.4	+ 9.9	4.84-4.50	0.9	0.7
Mobay Chemical Corp.	M	955.1	58.1	+60.3	———	6.1	16.8
Mobil Corp.	O	48241.0	2007.0	+77.5	9.46-5.34	4.2	20.5
Modine Mfg. Co.	P+C	211.9	14.4	+29.1	5.00-3.92	6.8	24.2
Monsanto Co.	M	6192.6	331.0	+ 9.4	9.11-8.29	5.4	11.4
Motorola Inc.	P+C	2713.8	154.3	+23.2	4.96-4.04	5.6	15.5
Nalco Chemical	M	578.9	63.3	+16.0	3.18-1.98	10.9	26.1
National Semiconductor Corp.	P+C	718.8	34.3	+52.4	2.57-1.72	4.8	20.3
National Standard Co.	MS	331.6	12.9	+ 6.3	3.14-2.95	3.9	11.6
National Steel Corp.	M	4234.5	126.5	+13.0	6.56-5.85	3.0	9.4
NL Industries, Inc.	M	1810.2	111.9	+29.7	3.28-2.52	6.2	14.4
Northwest Industries, Inc.	MS	2579.9	172.2	+14.4	5.60-4.90	6.7	20.7
Oakite Products, Inc.	M	60.3	3.9	+14.7	2.21-1.93	6.9	17.9
Olin Corp.	M	1778.1	71.2	+13.4	2.97-2.62	4.0	9.9
Owens-Corning Fiberglas Corp.	M	2245.2	109.3	(−16.0)	3.59-4.30	4.9	16.0
Paccar Inc.	O	1882.7	120.1	+38.5	14.57-10.51	6.5	25.0
Palo Alto Vacuum	O	493.0	18.7	+33.0	2.50-1.89	3.8	10.8
Pantasote Inc.	M	143.9	1.1	(−42.1)	0.29-0.50	0.8	——
Park-Ohio Industries, Inc.	MS	180.1	13.8	+34.0	5.32-5.00	7.7	19.1
Parker-Hannifin Corp.	MS	846.4	50.2	+27.0	3.75-3.05	5.9	18.8
Petrolite Corp.	M	186.9	15.6	+1.9	2.64-2.58	8.0	18.0
Phillips Petroleum Co.	M	9502.8	891.1	+24.0	5.77-4.66	9.4	23.2
Pitney Bowes Inc.	P+C	1024.9	63.5	+40.0	4.02-3.32	14.2	17.8
H. K. Porter Co., Inc.	P+C	644.5	23.9	+31.3	20.03-15.04	3.7	17.1
PPG Industries Inc.	MS	3091.8	218.9	+65.7	6.78-4.19	7.1	17.5
Questor Corp.	P+C	465.5	8.7	+10.1	0.88-0.80	1.9	5.9
Ranco	P+C	157.3	9.1	+8.3	2.57-2.29	5.8	16.7
Ransburg Corp.	PE	105.0	9.5	+24.0	3.10-2.51	9.0	23.2
Raytheon Co.	P+C	3727.9	197.2	+31.5	6.30-4.83	5.3	24.2
RCA	P+C	7454.6	283.8	+1.9	3.72-3.65	3.8	16.1
Republic Parts Inc.	P+C	81.6	2.3	(−8.0)	1.06-1.30	2.8	10.9
Republic Steel Corp.	M	3987.4	121.2	+9.1	7.49-6.86	3.0	8.6
Revere Copper & Brass Inc.	M	788.1	25.7	+235.8	4.50-(−3.36)	3.3	——
Rexene Co.	P+C	3088.6	138.1	+274.0	2.99-1.13	4.5	18.5
Rexnord Inc.	MS	1010.2	57.3	+6.3	2.91-2.77	5.7	16.2
Reynolds Metals Co.	M	3305.2	177.1	+50.3	9.25-6.11	5.4	15.4
Robertshaw Controls Co.	P+C	327.3	8.6	(−31.0)	2.20-320	2.6	7.8
Rockwell International	MS	6180.0	261.0	+48.0	7.33-5.02	4.2	16.9
Rogers Corp.	MS	93.0	4.4	+39.0	1.71-1.29	4.7	14.8
A. Schulman Inc.	MS	248.2	6.8	+42.2	3.75-2.63	2.7	17.3
SCM Corp.	MS	1753.7	47.4	+26.1	4.98-4.03	2.7	11.4
Sealed Power Corp.	P+C	279.4	20.9	+40.0	4.35-3.35	7.5	17.6
Sharon Steel	M	583.8	58.6	+58.8	0.71-0.45	10.0	22.8
Shell Oil Co.	M	14546.2	1125.6	+38.0	7.32-5.45	7.7	18.4
Sheller-Globe Corp.	P+C	656.4	13.7	(−17.0)	1.84-2.31	2.1	8.8
Signal Cos. Inc.	MS	4241.2	203.7	+26.8	5.28-4.17	4.8	17.2
Signode Corp.	PE	695.2	43.8	+15.0	5.56-4.85	6.3	15.4
A. O. Smith Corp.	P+C	836.0	23.6	(−13.0)	4.79-5.50	2.8	11.2

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Snap-On Tools Corp.	PE	373.6	42.6	+32.3	2.10-1.64	11.4	28.4
Sparton Corp.	P+C	81.9	5.1	+318.8	3.04-0.96	6.3	16.0
Spectral Dynamics	PE	124.2	7.2	+42.0	1.76-1.39	5.8	17.3
Sperry Vickers	PE	4200.0	224.0	+25.0	6.35-5.08	5.3	13.7
SPS Technologies	P+C	276.9	18.6	+95.8	4.29-2.27	6.7	20.7
Square D Co.	PE	826.1	130.9	+0.1	3.04-2.80	15.8	40.3
Stanadyne, Inc.	MS	415.4	20.9	+20.0	4.35-3.62	5.0	9.4
Standard Oil (CA)	O	29947.6	1784.7	+61.4	10.44-6.48	5.9	19.2
Standard Oil (IN)	O	18610.3	1506.6	+39.9	10.23-7.36	8.0	18.0
Standard Products Co.	MS	216.2	5.3	+43.2	4.37-3.02	2.5	12.5
Stanley	MS	872.3	51.4	+24.0	4.26-3.50	5.9	16.3
Stewart-Warner Corp.	MS	365.9	21.7	+1.9	4.19-4.09	5.9	13.1
Subaru	MS	549.9	10.4	+45.0	1.74-1.20	1.9	13.7
Sun Co.	O	10666.0	699.9	—	11.77-6.82	6.5	18.5
Sun Electric Corp.	PE	165.9	11.3	+37.8	2.32-1.69	6.8	19.3
Sundstrand Corp.	MS	842.6	67.1	+35.0	4.03-3.05	8.0	21.3
Talley Industries	P+C	433.2	10.5	(−37.1)	1.52-2.47	2.4	10.0
Tecumseh Products Co.	P+C	880.6	54.9	+10.2	10.04-9.11	6.2	19.3
Teledyne Ins.	MS	2705.6	371.9	+49.7	27.59-17.63	13.7	29.2
Tenneco Inc.	P+C	11209.0	571.0	+26.0	5.30-4.39	5.1	17.4
Texaco Inc.	O	38350.4	1759.1	+206.3	6.48-3.14	4.6	16.5
Texas Instruments Inc.	MS	3224.1	172.9	+23.0	7.58-6.15	5.4	12.5
Texasgulf Inc.	M	789.3	136.9	+273.2	4.05-1.33	17.3	16.0
Textron Inc.	MS	3392.9	302.6	+0.8	4.51-4.47	5.0	16.3
Thiokol Corp.	MS	557.0	40.1	+55.0	6.95-4.50	6.1	23.0
Thomas & Betts Corp.	P+C	226.4	30.0	+18.0	3.91-3.30	13.3	23.0
Timken Co.	PE	1282.1	102.1	+15.2	9.14-8.04	8.0	15.3
Tokheim Corp.	MS	101.6	6.4	+6.0	2.21-2.08	6.3	21.7
Townsend	P+C	3392.9	169.8	+1.0	4.51-4.47	5.0	16.3
Tracor, Inc.	P+C	243.3	9.9	+26.9	2.86-2.30	4.1	20.3
TRW	P+C	4560.3	194.6	+11.7	5.28-4.73	4.3	17.8
UMC Industries, Inc.	PE	364.4	13.6	+4.1	2.30-2.22	3.7	13.5
Unimation Inc.	PE	249.3	.6	—	———	0.2	—
Union Carbide Corp.	MS	9176.5	556.2	+41.0	8.47-6.09	6.1	13.8
Uniroyal	MS	2574.6	(−120.5)	—	(−4.54)-0.04	—	—
U. S. Steel Corp.	M	12929.1	(−293.0)	—	(−3.41)-2.85	(−2.3)	(−6.0)
United Technologies Corp.	M	9050.0	326.0	+39.3	6.49-5.45	3.6	13.0
Upjohn Co.	M	1508.0	149.5	+15.5	5.03-4.36	9.9	23.4
VSI Corp.	P+C	320.3	21.5	+69.2	3.44-2.06	6.7	22.9
Walco National Corp.	P+C	154.9	7.8	+18.2	3.57-3.05	5.0	17.5
Wallace Murray Corp.	P+C	595.3	35.5	+25.0	5.82-4.74	6.0	20.4
Warner & Swasey Co.	PE	305.0	21.5	+83.8	6.13-3.34	7.0	—
Wean United Inc.	PE	205.9	.8	(−77.1)	0.05-0.91	0.4	1.4
Westinghouse Electric	P+C	7332.0	(−73.9)	—	(−.87)-2.81	—	18.4
Wheeling Pittsburgh	M	1242.3	49.7	+261.6	12.16-4.23	4.0	14.6
Whitaker Cable Corp.	P+C	65.7	1.6	+26.0	1.33-1.05	2.5	13.2
White Consolidated	MS	2010.1	75.7	+39.0	4.87-4.33	3.8	18.7
White Motor Corp.	O	1211.0	12.9	+43.0	0.67-(−0.06)	1.1	5.6
Witco Chemical Corp.	MS	966.8	42.8	+28.0	4.83-3.86	4.4	18.1
Wyman-Gordon Co.	P+C	427.0	20.6	(−23.1)	2.28-3.05	4.8	13.2

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AUTOMOTIVE INDUSTRIES

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3rd ANNUAL ISSUE

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MATERIALS
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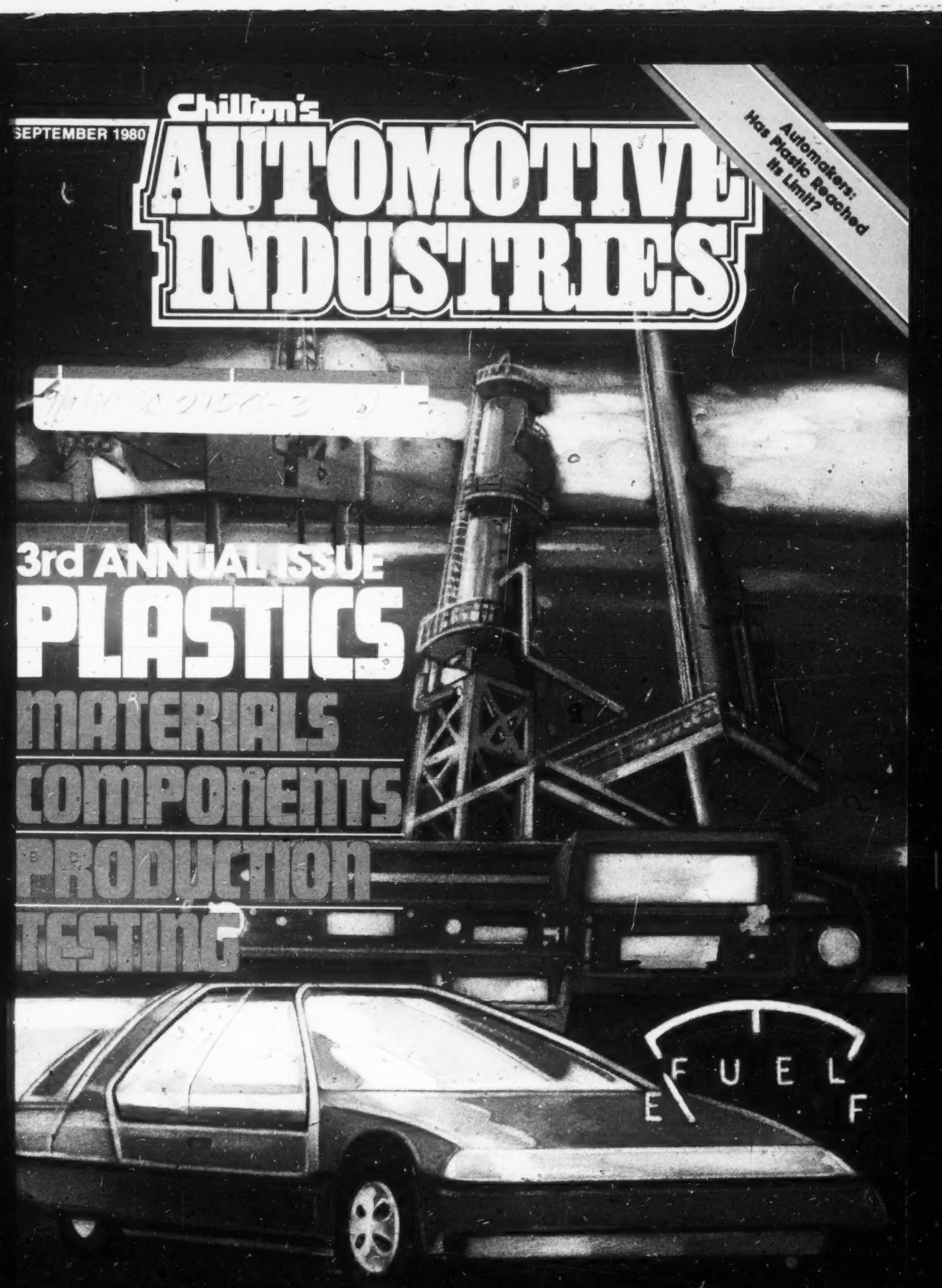
PRODUCTION
TESTING



Chilton's AUTOMOTIVE INDUSTRIES

September, 1980/Volume 160, Number 9

FEATURES

38 Plastics: From The Ground Up
Plastic has become the most versatile lightweight material for vehicle design.

43 RIM Injects New Automotive Possibilities
Recent advancements assure a bright future for RIM.

47 New Uses And Resins Stand Out
Plastics applications can't be limited to any one company or country.

52 Failure To Test Means Just Plain Failure
New, more sophisticated testing is a must for the present variety of plastics.

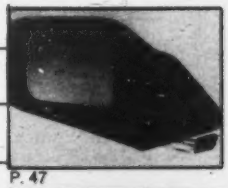
56 Has Plastic Reached Its Limit?
There's disagreement in Detroit about how far plastic can go.

59 Fiberglass Spring May Signal Future Trend
A new fiberglass leaf spring may point the way for future suspensions.

63 More Than Just A Lightweight
A plastic carburetor from Japan does more than just cut weight.

68 Magic Moldmaker Shoots From The Hip
Ed Axel gets beautiful finished results from FRP as if by magic.

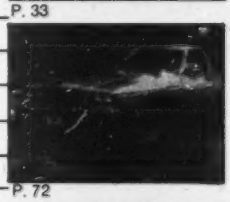
70 Cutting Weight With SMC
An '81 Olds wagon gains an SMC tailgate and lost 14 lb.


P. 47

P. 56

P. 68

P. 33


P. 72

P. 80

NEWS

7 Editorial: Bottom Line Baseball

8 Letters: Tirade & Trivia

10 Detroit: Does November Hold Promises For Detroit?

12 Washington: GOP Offers New Options On 1980 Platform

15 Performance: Electronics Plunge Into Auto Applications

16 Auto/Pulse Int'l.: We Are All Free-Traders—Or Are We?

23 Automotive News/Analysis

DEPARTMENTS

72 Trendsetters: Four Approaches To Luxury

75 Inside Japan: The New No. 1

76 Components: Hydraulic Clutch Actuation For Eagle

80 Production: CNCing Flatter, Smoother Grindings

82 Materials: New Plastic Applications Hit The Scene

85 Electronics: Measuring Unit Has Own Computer

86 Truck & Off-Highway: Material Developments For The Plastic Cab

90 New Products Showcase

94 Technical Literature

97 Business Staff

99 Ad Index

101 Reader Information Cards

COVER

From an offshore oil rig to a towering petroleum cracker to finished dashboards and body panels, the story of automotive plastics is a revolution in vehicle design.

NEXT MONTH

Detroit fights back at the recent sales slump with a gaggle of dazzling front-wheel-drive, fuel efficient new models for 1981.

AUTOMOTIVE INDUSTRIES (ISSN 0005-1527) magazine is published monthly by Chilton Co., Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies Inc., New York, NY. Subscription prices: United States and U.S. Possessions, $20.00 per year, $35.00 for 2 years; Canada $45.00; Other countries $55.00 per year. Air rates on request. Single copies and back issues on request. All subscription orders must be accompanied with cash or check, along with complete information for classification, including the title of the individual and the product the company manufactures. Controlled circulation postage paid at Philadelphia, PA. POSTMASTER: Send address changes to AUTOMOTIVE INDUSTRIES, P.O. Box 2055, Radnor, PA 19089.

Key Indicators

U.S. New Car Production — Units

		1980	1979	Year to Date 1980	1979
AMC	July	2,930	7,961	76,428	85,530
Chrysler	July	28,951	59,546	356,937	577,784
Ford	July	47,340	127,261	736,215	1,350,309
GMC	July	315,501	374,288	2,516,823	3,306,775
Volkswagen of America	July	20,273	11,237	125,732	92,671
TOTAL		414,995	580,293	3,812,135	5,413,069
Imported Car Sales	June	190,424	203,348	1,251,905	1,201,428
Imported Car Penetration		27%	22%	27%	21%

Billions of Dollars, Seasonally Adjusted Monthly Total (Unless Otherwise Noted)

Durable Goods Manufacturing		Current Month	Previous Month	Same Period Last Year
New Orders	June	$ 66.6	$ 67.3	$ 75.8
Shipments	June	68.9	69.4	72.6
Inventories	June	160.5	160.6	141.7
Unfilled Orders	June	270.7	273.0	258.5
Manufacturers Value of Shipments				
Primary Metals, Total	June	$ 9.9	$10.3	$11.5
Steel	June	4.3	4.7	5.6
Nonferrous Metal	June	4.6	4.6	4.8
Nonelectrical Machinery Equip. Industries, Total	June	13.8	13.5	12.9
Engines & Turbines	June	1.1	1.1	1.1
Farm Machinery & Equip.	June	1.0	1.1	1.1
Construction, Mining & Materials Handling Equip.	June	2.5	2.6	2.6
Fluid Power Equip. (Index 1972 = 100)	June	252	266	253
Metalworking Machinery	June	.9	.9	.8
General Industrial Machinery	June	1.1	1.1	1.1
Electrical Machinery & Equip. Industries, Total	June	9.9	10.0	9.3
Electrical Transmission & Industrial Apparatus	June	1.7	1.6	1.7
Communications Equip.	June	3.0	3.2	2.5
Electronic Components	June	1.9	1.8	1.5
Transportation Equipment Industry, Total	June	12.9	13.3	15.4
Motor Vehicle & Parts	June	7.3	7.3	10.3
Aircraft, Missiles & Parts	June	3.9	4.3	3.4
Shipbuilding & Military Tank Vehicles	June	.8	.9	.7
Instruments, Total	June	3.3	3.3	3.0

Sources: U.S. Dept. of Commerce, Individual Motor Vehicle Manufacturers, National Fluid Power Association

However, all manufacturers should be able to meet the 3.4-gpm standard by the 1983 model, the panel concluded. The additional two years of development "could provide simplified systems, which would probably be less expensive and more reliable."

In questioning the need for the 3.4-gpm standard, the panel noted that "California Air Resources Board (CARB) field test data for oxidation catalyst vehicles certified to a 9.0-gpm CO standard indicate that the 1978 EPA Mobile Source Emission Factors (MSEF) overpredict the 1977-1979 California vehicle fleet average lifetime (50,000 mile) CO emissions by 50%. EPA's new field test data for this vehicle fleet, however, disagree with both the CARB data and EPA's 1978 MSEF predictions."

NRC said it also could not "reconcile" the differences between EPA's and CARB's most recent data and future vehicle emissions predictions.

"If the CARB estimates of present and future in-use CO emissions are correct nationally, CO emissions for light-duty vehicles will be approximately a factor of three less than EPA estimates, and a CO standard higher than 3.4-gpm will probably be sufficient to meet the federal air quality standard.—*Paula D. Hodges*

It's No Go For Proco

Ford's Proco V-8 engine has one foot in the grave. Though company spokesmen say the concept of programmed combustion could be applied to V-6s and I-4s, this appears unlikely. Foremost amongst indications that the program is dead is United Technologies' Auto Group announcement that it presently has no plans to build the injectors and pump for the Proco program.

In January of this year United Technologies announced it would build a plant in Kentucky to build

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NOTE

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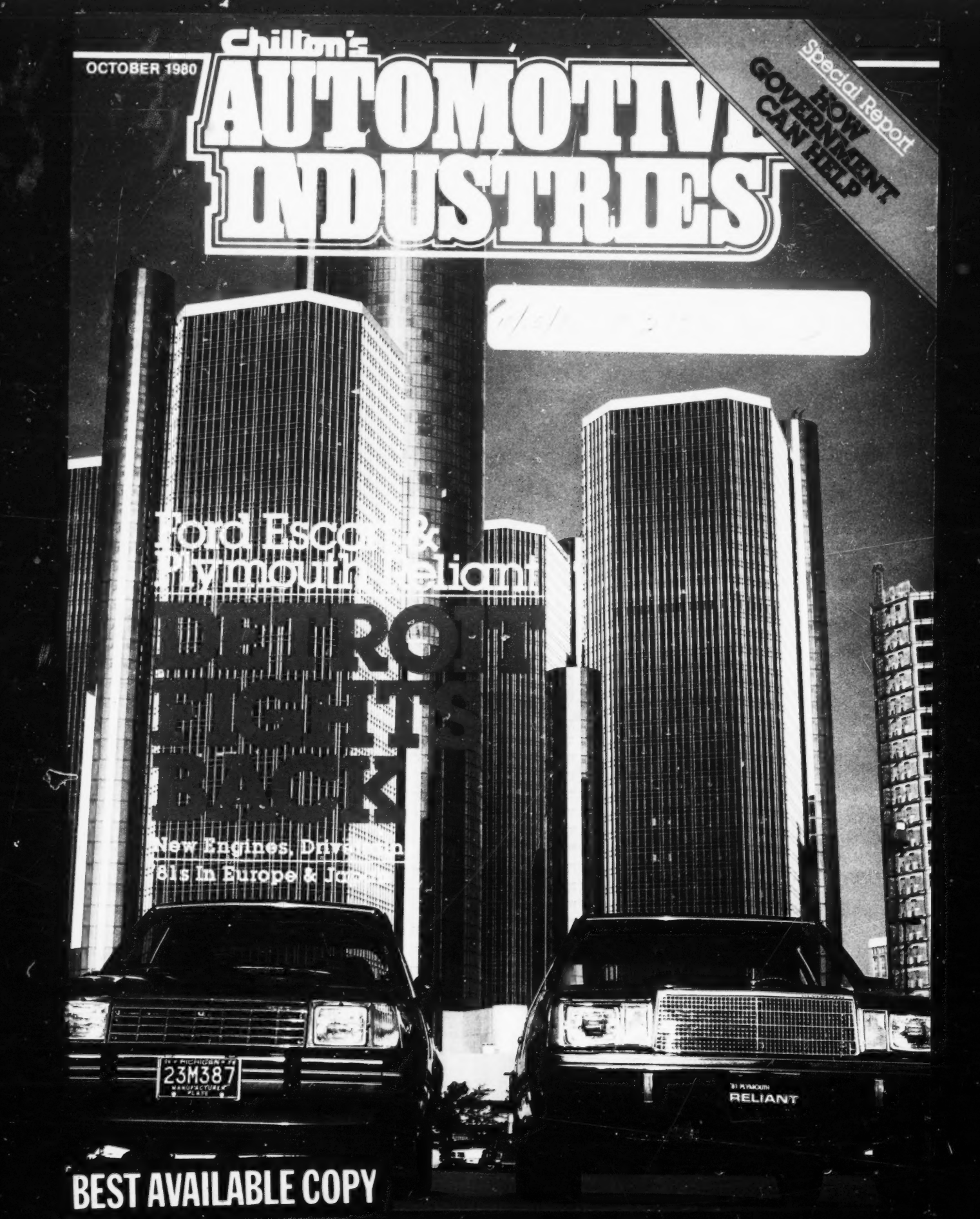

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Chilton's AUTOMOTIVE INDUSTRIES

October, 1980/Volume 160, Number 10

FEATURES

36 Detroit Fights Back
The '81 domestic cars feature greater efficiency, comfort and convenience.

43 Fuel Efficient Fours From Chrysler And Ford
Two OEMs offer all-new four-cylinders for their new front-wheel-drive cars.

48 Japan Announces New Efficient Powerplants
New Japanese lightweight diesel and gas engines offer power and mpg.

52 BL Distinguishes The Metro Personality
BL's new mini is big on style as well as economy.

54 Ford Escort—Tailored For Two Markets
Ford's new 'world car' has different personalities for its different markets.

57 New Developments Enhance Efficiency
Greater efficiency for fuel economy is receiving the most attention in Detroit.

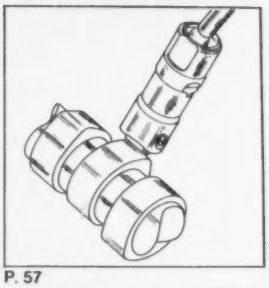
62 How The Government Can Help
U.S. auto executives tell *AI* how Washington can *really* help the industry.

67 Poling Plans To Pull Ford Up By Its Sales Straps
Harold Poling is pushing Ford toward a bigger slice of the small car pie.

71 New Stripe Hardening Method Offers Advantages
A new line hardening process offers cost-effectiveness and flexibility.

73 Stop Thief—In One Simple Step
Polyester identification labels make life harder for 'chop-shop' thieves.

P. 36

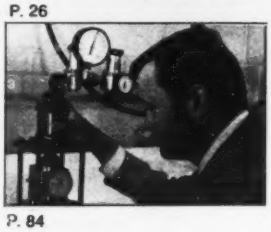


P. 57

P. 54

P. 67

P. 26



P. 84

NEWS

7 Editorial: Yet Another Poll
8 Detroit: Escaping The Tyranny Of Oil Dependance
10 Washington: Storm Clouds Over Japan
14 Performance: Strategic Planning For The Oil War
18 Auto/Pulse Int'L: Two Cars That Must Succeed
21 Automotive News/Analysis

DEPARTMENTS

78 Inside Japan: This Month: Inside Korea
81 Production: Quality A Must In Emissions Hardware
82 Components: Vacuum Pump Gives EV Brakes A Boost
84 Materials: No Asbestos In Nobestos
86 Truck & Off-Highway: Aluminum Lightens Specialty Vehicles
90 New Products Showcase
99 Technical Literature
101 Ad Index
103 Business Staff
105 Reader Information Cards

COVER

Featured this month are Detroit's two most dramatically new, fuel-efficient, front-wheel-drive wonders—the Plymouth Reliant and Ford Escort.

NEXT MONTH

November *AI* looks into tooling materials, '81 light trucks from here and abroad (*and* the sticky tariff issue) plus our exclusive roominess index.

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			Year to Date	
	1980	1979	1980	1979
AMC ..... Aug.	16,936	22,270	114,084	108,095
Chrysler ..... Aug.	31,430	49,907	368,368	648,612
Ford ..... Aug.	88,008	146,974	804,223	1,522,416
GMC ..... Aug.	178,907	218,365	2,696,730	3,541,569
Volkswagen of America ..... Aug.	17,009	11,148	142,741	103,819
TOTAL	312,290	448,664	4,145,146	5,924,511
Imported Car Sales ..... Aug.	198,400	209,600	1,681,226	1,643,443
Imported Car Penetration	29%	23%	29%	22%

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Steel ..... July	4.4	4.3	5.6
Nonferrous Metal ..... July	4.9	4.6	4.4
Nonelectrical Machinery Equip. Industries, Total ..... July	13.5	13.8	12.0
Engines & Turbines ..... July	1.2	1.1	.9
Farm Machinery & Equip. ..... July	1.1	1.0	1.0
Construction, Mining & Materials Handling Equip. ..... July	2.5	2.5	2.6
Fluid Power Equip. (Index 1972 = 100) ..... July	273	248	284
Metalworking Machinery ..... July	.8	.9	.7
General Industrial Machinery ..... July	1.1	1.2	.9
Electrical Machinery & Equip. Industries, Total ..... July	10.0	9.9	8.2
Electrical Transmission & Industrial Apparatus ..... July	1.7	1.7	1.5
Communications Equip. ..... July	3.1	3.0	2.3
Electronic Components ..... July	1.8	1.9	1.4
Transportation Equipment Industry, Total ..... July	14.7	12.9	13.6
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Shipbuilding & Military Tank Vehicles ..... July	.8	.8	.7
Instruments, Total ..... July	3.4	3.3	2.8

Sources: U.S. Dept. of Commerce, Individual Motor Vehicle Manufacturers, National Fluid Power Association

Ethyl is relying heavily on knock-sensors or octane-sensors introduced by auto companies to prevent knocking in turbocharged or other engines; a relatively new turbulent flow manifold which distributes a better-mixed fuel-air mixture; and possibly, lead traps in the exhaust system to collect the emitted lead.

Gilliam Clark, supervisor of product applications for Ethyl Corp., said, "Lean-burn smog control can burn the undesirable emissions to very low levels in the engine and not require catalysts or unleaded gasoline to meet the standards. We are emphasizing that the marriage of lean-burn to knock-sensing, as the Mercedes-Benz people have already explained, will probably produce the most important future electronically-controlled cars."

To support their allegations that U.S. emissions standards cause a fuel penalty, the Ethyl engineers described their testing of three almost identical Renault Le Cars which were fitted with U.S., European and Canadian emissions systems.

On Ethyl's city-cycle driving tests, the U.S. car got 25 mpg (9.4 L/100 km). But the Canadian car got 33 mpg (7.1 L/100 km) for a 32% improvement, while the European car got 43 mpg (5.5 L/100 km)—a 72% improvement.

These improvements were greater than expected, but Ethyl is convinced that the 1980 emissions levels could easily provide a 15% overall improvement in gasoline mileage, if high-compression (9.5:1) engines and unleaded gas were used. This reporter drove both Le Cars and got a 66% mileage improvement in the European version.

In addition, engineers at Ethyl and elsewhere generally agree that producing unleaded gasoline at the refinery consumes 5-6% more crude oil. By contrast, the addition of the projected one gram of lead per gallon would cost less than one cent. And Clark said the engine changes needed for lean-burn operation

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